CLAIMS

1. A method for transmitting frames of digital information over a wireless communication connection between a transmitter and a receiver, comprising the steps of:

- in the transmitter, convolutionally encoding and puncturing a certain sequence of bits within each frame of digital information before transmitting the frame over a wireless communication connection, and

- in the receiver, decoding and depuncturing the sequence of bits within each frame of digital information that was convolutionally encoded and punctured, after receiving the frame over a wireless communication connection;

wherein:

- said step performed in the transmitter comprises the substep of rearranging the sequence of bits within each frame of digital information that is to be convolutionally encoded and punctured, before convolutionally encoding and puncturing it, into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors exhibits a predefined behaviour and

- said step performed in the receiver comprises the substep of inversely rearranging the sequence of bits within each frame of digital information that was so rearranged in the transmitter so that the effect of said rearranging in the transmitter on the mutual order of the bits of the sequence is cancelled, after decoding and depuncturing the sequence of bits.

2. A method according to claim 1, wherein the rearranging of the sequence of bits within each frame of digital information is made into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors increases essentially monotonously towards the end of said convolutionally encoded and punctured sequence.

3. A method according to claim 1, comprising the steps of:

- in the transmitter, dividing the digital information belonging to each frame into at least two classes, of which only the bits belonging to one class are subjected to said rearranging before convolutionally encoding and puncturing and

- in the receiver, combining the digital information belonging to each frame from at least two classes, of which only the bits belonging to one class are subjected to said inverse rearranging after decoding and depuncturing.

4. A method according to claim 3, comprising the steps of:
- in the transmitter, calculating a checksum over the bits belonging to one class that is not subjected to said rearranging before convolutionally encoding and puncturing, and adding said checksum into the frame of digital information to be transmitted to the receiver, and
- in the receiver, recalculating a checksum over the bits belonging to said one class that is not subjected to said rearranging after decoding and depuncturing, and comparing the recalculated checksum to a checksum received within the frame of digital information received from the transmitter in order to find out, whether transmission errors occurred among the bits over which the checksum was calculated.

5. A method according to claim 3, comprising the steps of:
- in the transmitter, producing in said dividing step a certain predefined class of bits and inserting the bits belonging to this predefined class of bits into the frame of digital information to be transmitted to the receiver without subjecting them to either rearranging, convolutional encoding or puncturing and
- in the receiver, combining the digital information belonging to each frame also from bits that are not subjected to either decoding, depuncturing or inverse rearranging.

6. A method for processing frames of digital information in a transmitter before transmitting them over a wireless communication connection to a receiver, comprising the steps of:
- convolutionally encoding and puncturing a certain sequence of bits within each frame of digital information before transmitting the frame over a wireless communication connection,
- before convolutionally encoding and puncturing the sequence of bits within each frame of digital information that is to be convolutionally encoded and punctured, rearranging it into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors exhibits a predefined behaviour.

6. A method according to claim 5, wherein the rearranging of the sequence of bits within each frame of digital information is made into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors increases essentially monotonously towards the end of said convolutionally encoded and punctured sequence.

7. A method for generating rearranging and inverse rearranging tables for the purpose of optimizing the probability distribution of transmission errors in transmitting frames of digital information over a wireless communication connection between a transmitter and a receiver, comprising the steps of:
- simulating the propagation of a number of frames of digital information through an arrangement of a transmitter, an error-inducing channel and a receiver, so that in the transmitter a certain sequence of bits within each frame of digital information is convolutionally encoded and punctured before transmitting the frame over a wireless communication connection and in the receiver the sequence of bits within each frame of digital information that was convolutionally encoded and punctured is decoded and depunctured after receiving the frame over a wireless communication connection,
- observing and storing the statistical probability of transmission errors per bit position in the convolutionally encoded and punctured sequence that is produced in the transmitter,
- rearranging the bit positions within said certain sequence of bits within each frame of digital information so that the importance to a certain subjective signal quality of each bit position comes to inversely correspond to the observed and stored statistical probability of transmission errors per that bit position and
- storing the correspondence between the original bit positions and the rearranged bit positions as a rearranging table and the correspondence between the rearranged bit positions and the original bit positions as an inverse rearranging table.

8. A transmitter for processing frames of digital information before transmitting them over a wireless communication connection to a receiver, comprising:
- convolutional encoding and puncturing means for convolutionally encoding and puncturing a certain sequence of bits within each frame of digital information before transmitting the frame over a wireless communication connection, and
- rearranging means for rearranging the sequence of bits within each frame of digital information that is to be convolutionally encoded and punctured, before

convolutionally encoding and puncturing it, into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors exhibits a predefined behaviour.

9. A transmitter according to claim 8, wherein the rearranging means is made to rearrange the sequence of bits within each frame of digital information that is to be convolutionally encoded and punctured, before convolutionally encoding and puncturing it, into an order that has been found to produce, during the course of convolutionally encoding with a certain convolutional code and puncturing with a certain puncturing pattern, a convolutionally encoded and punctured sequence where the statistical probability of transmission errors increases essentially monotonously towards the end of said convolutionally encoded and punctured sequence.